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preferable to black lead for securing at least the upper surfaces of the stairs from rust, as the latter would make them so very slippery, that it would be difficult to stand on them; a carpet or oil-cloth, would, however, remove this inconvenience.

The writer of this article recollects mentioning the use of tiles for flooring over iron rafters, both to Mr. Cook and to Mr. Norton, several weeks ago. They would form both secure and cheap flooring, but laying a wooden floor over them, as mentioned by Mr. Cook, is not absolutely necessary. Tiles may be prepared for floors at the British potteries, so as to be highly ornamental, either in single patterns for each tile, or so as that several will unite to form one design, which would look at least as well as a wooden floor, or if expense was no object, the floors might be of marble or white stone; where it was an object, the plain red tiles would do sufficiently well, and where carpets or oil-cloths are used, would be in all respects equal to the others. The tiles might be fastened to the rafters by screws with nuts underneath; most flooring tiles have holes in the corners, which would answer for this purpose; but at all events they might be easily formed with them. Indeed where tiles were used for floors, wooden rafters would cause little danger of fire, for only a long continued and strong fire over the tiles, would cause heat enough to inflame the rafters through them, but iron rafters would certainly be more secure. This method of forming floors, is, we understand, common in Paris, and other parts of France, as mentioned in the paper on providing employment for the labouring poor, inserted in our last number. Where wooden rafters are used, the tiles might be screwed to them by the common screws for entering wood, which would be better than nails, as the latter would be apt to cause the tiles to be broken in driving them.

Patent of James Grellier esq. of Barking, Essex, for a Building of a peculiar Construction for the purpose of Burning Coke and Lime. Dated Feb. 1809.

The body of the lime kiln is made of the usual form in Mr. Grellier's plan, and beneath it are placed chambers of the form of common coke ovens, in which the coal is burned separately from the lime and converted into coke; flues proceed from the coke ovens to the lime kiln, by which the heat is conveyed that calcines the limestone. These flues are either made to enter at the bottom of the lime kiln, "the lime being prevented from descending as low as the said bottom, or floor, by an arched grating or support made of iron bars, or of brick work or other proper material; or otherwise the flues communicate, through the sides of the lime kiln, so as to burn the stone which lies above the place of their entrance. In the first case the lime is drawn out through doors, or quarters made just above the iron grating; and in the last case the lime kiln, or chamber where the lime is burned, is continued several feet below the entrance of the flues; and the burned lime is drawn out in the same manner as is done in a common lime kiln. By these arrangements it is easy to charge the kiln with lime stone, and the coke ovens with coal repeatedly; and to draw out the coke, and the lime at the proper periods so as to continue the operations of coke making and lime burning continually during any length of time.

Mr. Grellier states finally that the lime kiln and coke oven may be made to good effect of various forms, yet he prefers coke ovens of an elliptical shape so disposed in the lower part of a circular building that the longest diameter of the ellipsis, may respectively lie in radii, in one of the horizontal sections of the said building; and that the mouths of the ovens may open externally, and the flues communicate internally with one lime kiln, having its axis perpendicular to the horizon, and coincident with the axis of the building itself.

Observations. It certainly is a grievous sight to any one who knows the value of fuel, to behold the enormous waste of it in the parts of England where coke is made. It is no exaggeration to say, that the heat which is there wasted would be sufficient for all the various purposes to which fire is applied throughout Europe. The object of the above patent is worthy of every encouragement, tending, as it does, to employ beneficially some of this now wasted heat. Mr. Cook, the author of the foregoing paper, has made some calculations on the benefit which the use of gas lights would be in the above respects, of applying beneficially the waste of the coke manufacture, or in other words, of making coke so as to employ all the products of the coal, from whence it appears that the greatest part of the coke wanted in the iron founderies and in other businesses might be supplied in this way. The consumption of coal in the various manufactures of these kingdoms is so prodigious, that serious apprehensions have been entertained of the supply falling short, at some future period. Mr. Davy, the chemist and mineralogist, has made calculations of the extent of the coal beds of England, which show that these apprehensions are fallacious; but still this should not encourage waste, for it is evident that as the coal beds are worked deeper the expense of raising the coals must be encreased; and that the present great waste of them may therefore in time raise the price to an inconvenient height, though it may not be sufficient to cause an absolute scarcity.

Patent of Mr. Charles Seward of Lancaster, Tin-plate Worker; for a new improved Burner and Lantern head, for Street and other Lamps.

Dated July, 1809.

The head of Mr. Seward's lamp is rather flatter than ordinary, and through its centre a tube, about ten inches long and three in diameter, passes down to within two inches of the burner; the upper end of this pipe is covered by a scolloped cap, of a conical form, to exclude the wind and rain, while it allows the smoke to escape through its apertures. The rim of the cover, where it joins the glass globe (which is of the usual form) is pierced all round with a number of holes, for the admission of air; the cover shuts down over an inner rim, that is attached to the glass, but which does not rise quite so high as the cover, and being made to slope a little inwards, admits the air to pass freely between it and the outward rim, while it excludes the wind and rain; to render which purpose more effectual the holes in the outward rim are placed lower than the top of the inner rim. The reservoir for the oil is made very shallow, about three quarters of an inch deep, in order that the oil may be always near the flame, and have as little as possible to ascend up the wick. It is also of importance that the reservoir be made no larger than to contain a sufficient quantity of oil for each time of burning: it is therefore recommended that these reservoirs be made of different sizes, according to the different length of time they are required to burn; this reservoir is covered, and a part projects from it of a tubular form which contains the wick; this part is an eighth of an inch deeper than the reservoir, and the oil is also poured in through it. The wick is contained in a moveable flat tube, which reaches quite down to the bottom of the reservoir, and has notches cut in it below to admit the oil. This form of the wick tube admits of its being made very wide without the wick being liable to slide down and extinguish the light; the width of this tube should not be less than a sixth of an inch. A wide tube is necessary to make a lamp burn well with common oil, and by reaching low down, the oil is warmed and prevented from coagulating. The wick tube is soldered to a small round piece of tin, the edge of which rests on a shoulder on the inside of the projecting part, and then lies in a level with the top of the reservoir. The wick tube should not rise above an eighth of an inch above this tin plate, and its top will then be on a level with that of the projecting part.

The reservoir is suspended by wires so that the flame shall be just under the centre of the smoke tube. The wick is of the broad flat kind, called garter or riband wick, and is prepared by soaking it in tallow, and pressing out the superfluous grease, which causes it to burn more clearly and to last longer. It is then cut into pieces, a quarter of an inch longer than the wick tube; which being stiff with the tallow, are easily put into the top of the wick tubes.